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Our Studies on Egg Shell Fragility

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Thin or improperly formed egg shells cause serious losses to our poultry industry, and the problem becomes progressively greater during aging of the laying flock. Therefore, the Animal Science and Chemistry Departments are undertaking work to attempt to understand the causes for greater fragility of the eggs of older laying hens and to reduce the problem by removing or alleviating the causes. Since the work has just begun, no results are yet available. The studies to be undertaken are outlined below.

In the first experiment, three treatments will be used in an effort to bring about a reduction in rate of egg production and thus possibly extend the duration of lay and reduce the production of thin-shelled eggs. Two strains of birds will be used, one known to lay more soft shelled eggs than the other. Treatments include (1) a good diet (16% protein and adequate in all known factors) fed without restriction, (2) the same good diet fed on a restricted basis and (3) a 12% protein diet fed without restriction. Egg production and egg shell quality will be evaluated and several enzyme assays and tissue studies will be conducted in an effort to find some metabolic explanation for egg shell thinning during aging. This experiment is now in about its 30th week and will continue through at least 80 weeks.

In a second experiment, forced molting at various times will be used to interrupt the laying cycle, thus probably extending the duration of lay and reducing the production of poor quality egg shells. Measurements similar to those described for the first experiment will be made.

In a third experiment, Japanese quail will be used to determine the possible effect of uninterrupted egg production on livability. A control group will be allowed to lay without interruption, while a second group will be molted at intervals to interrupt egg production. Egg production, egg shell quality and livability of the birds will be measured, and it is hoped that this and the other studies will aid in developing methods for improved shell quality and possibly provide insights into the problem of aging.

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